SRI RAMAKRISHNA MISSION VIDYALAYA COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS), COIMBATORE – 641 020.

B.Sc Information Technology (IT)
(Under Choice Based Credit System (CBCS) 2017 – 2018 onwards)

SEMESTER – I

S.NO	COURSE CODE	PART	COURSE TITLE	HRS/WK	CREDITS	EXAM HRS	MAX MARKS		
							INT	EXT	TOT
1	17UGC1TA1	I	Tamil – I	6	3	3	25	75	100
2	16UGC1EN1	II	English – I	6	3	3	25	75	100
3	16UIT1C01	III	Core : Programming in C	5	4	3	25	75	100
4	13UIT1AL1	III	Allied : Mathematics – I	6	5	3	25	75	100
5	16UIT1CP1	III	Core Practical : Programming in C	5	3	3	40	60	100
6	15UGC1ENS	IV	Environmental Studies	2	2	2	-	75	75
			TOTAL	**30**	**20**				**575**

SEMESTER – II

S.NO	COURSE CODE	PART	COURSE TITLE	HRS/WK	CREDITS	EXAMS HRS	MAX MARKS		
							INT	EXT	TOT
1	17UGC2TA2	I	Tamil – II	6	3	3	25	75	100
2	16UGC2EN2	II	English – II	6	3	3	25	75	100
3	16UIT2C02	III	Core : Object Oriented Programming with C++	5	4	3	25	75	100
4	13UIT2AL2	III	Allied : Mathematics – II	6	5	3	25	75	100
5	16UIT2CP2	III	Core Practical : Object Oriented Programming with C++	5	3	3	40	60	100
6	16UGC2VAE	IV	Value Education	2	2	2	-	75	75
			TOTAL	**30**	**20**				**575**

SEMESTER – III

S.NO	COURSE CODE	PART	COURSE TITLE	HRS/ WK	CREDITS	EXAMS HRS	MAX MARKS		
							INT	EXT	TOT
1	16UIT3C03	III	Core : Java Programming	5	4	3	25	75	100
2	17UIT3C04	III	Core : Data and File Structures	5	4	3	25	75	100
3	16UIT3C05	III	Core : Digital Computer Fundamentals and Computer Organization	4	4	3	25	75	100
4	15UIT3AL3	III	Allied : Operations Research	6	5	3	25	75	100
5	16UIT3CP3	III	Core Practical : Java Programming	4	3	3	40	60	100
6	16UIT3CP4	III	Core Practical : Data Structure using C++	4	3	3	40	60	100
7	13UIT3NM1	IV	Non Major Elective : Grammar and Communication/ Basic Tamil-I	2	2	2	-	50	50
			TOTAL	**30**	**25**				**650**

SEMESTER – IV

S.NO	COURSE CODE	PART	COURSE TITLE	HRS/ WK	CREDITS	EXAMS HRS	MAX MARKS		
							INT	EXT	TOT
1	16UIT4C06	III	Core : VB.NET Programming and RDBMS	6	5	3	25	75	100
2	17UIT4C07	III	Core : Computer Networks	6	5	3	25	75	100
3	13UIT4AL4	III	Allied : Financial Accounting	6	5	3	25	75	100
4	16UIT4CP5	III	Core Practical : VB.NET Programming and RDBMS	5	3	3	40	60	100
5	16UIT4CP6	III	Core Practical : Web Technology – I (HTML and XML)	5	3	3	40	60	100
6	13UIT4NM2	IV	Non Major Elective : Communicative English/Basic Tamil-II	2	2	2	-	50	50
7	15UGC4NSS/ SPO	V	Extension Activities - NSS/SPORTS	-	1	2	25	25	50
			TOTAL	**30**	**24**				**600**

SEMESTER – V

S.NO	COURSE CODE	PART	COURSE TITLE	HRS/WK	CREDITS	EXAMS HRS	MAX MARKS		
							INT	EXT	TOT
1	16UIT5C08	III	Core : C#.NET Programming	4	4	3	25	75	100
2	16UIT5C09	III	Core: Operating System	5	5	3	25	75	100
3	16UIT5C10	III	Core : Web Technology – II (PHP, Ajax and Joomla)	4	4	3	25	75	100
4	16UIT5EL1	III	Elective : Group I	4	4	3	25	75	100
5	16UIT5CP7	III	Core : Practical : C#.NET Programming	4	3	3	40	60	100
6	16UIT5CP8	III	Core Practical : Web Technology – II (PHP, Ajax and Joomla)	4	3	3	40	60	100
7	16UIT6CPR	III	Core : Project Work and Viva-Voce	5	-	-	-	-	-
			TOTAL	30	23				600

SEMESTER – VI

S.NO	COURSE CODE	PART	COURSE TITLE	HRS/WK	CREDITS	EXAMS HRS	MAX MARKS		
							INT	EXT	TOT
1	16UIT6C11	III	Core : Mobile Application Development	5	5	3	25	75	100
2	16UIT6C12	III	Core : Software Engineering	5	5	3	25	75	100
3	17UIT6C13	III	Core : Cyber Security	6	5	3	25	75	100
4	17UIT6EL2	III	Elective : Group II	5	5	3	25	75	100
5	16UIT6CP9	III	Core Practical : Mobile Application Development and Multimedia	4	3	3	40	60	100
6	16UIT6CPR	III	Core : Project Work and Viva-Voce	5	5	-	40	60	100
			TOTAL	30	28				600

TOTAL CREDITS: 140
TOTAL MARKS: 3600

Elective Papers List

Group I	Group II
Elective : Artificial Intelligence and Expert System	Elective : Analysis and Design of Algorithms
Elective : Cloud Computing	Elective : Embedded Systems
Elective : Client/Server Technology	Elective : Compiler Design
Elective : Data mining and Warehousing	**Elective : Multimedia**
Elective : Geographical Information System(GIS)	Elective : Computer Graphics

Part	Subject Types	No.of Papers	Credits	Marks
I	Tamil	2	6	200
II	English	2	6	200
III	Core	23	90	2300
	Allied	4	20	400
	Elective	2	9	200
IV	Non Major Elective	2	4	100
	Environmental studies	1	2	75
	Value education	1	2	75
V	NSS/NCC/Sports	1	1	50
	TOTAL	38	140	3600

Programme: B.Sc IT   Course Title: Core : Programming in C

Subject Code:16UIT1C01   Year: I   Semester: I

5 Hours/ week
                                                           4 Credits

COURSE OBJECTIVES
- To understand the basic concepts of problem solving approaches and develop optimal program structure using conditional and iterative control structures and functions.
- To design, implement, test, and apply the basic C programming concepts.
- Apply the techniques of structured (functional) decomposition to break a program into smaller pieces and describe the mechanics of parameter passing.

Unit I

Overview of C – Introduction – Character set – C Tokens Keywords & identifiers- Constant – Variables – Datatypes – Declaration of Variables – Assigning values to variables- Defining Symbolic Constants- Arithmetic, Relational Logical, Assignment, Conditional Bitwise, Special, Increment and Decrement operators – Arithmetic Expressions- Evaluation of expression – Procedure of arithmetic operators – Type conversion in expression – operator precedence & associatively – mathematical functions – Reading & writing a character– formatted input and output. PageNo:1-20,22-36,38-44,51-103

Unit II

Decision making and Branching – Decision making with IF Statement – simple IF Statement – The IF ELSE statement – Nesting of IF-ELSE statement- Decision Making and Looping – The WHILE statement. The Dimensional – Multidimensional arrays- Character string Handling – Declaring and initializing string variables – Reading strings from technical- writing strings to screen Arithmetic operation on character – putting strings together- comparison of two strings - string handling functions – table of Strings. PageNo:110-122,145-168,180-183,197-198,218-239.

Unit III

User defined functions – need for user Defined functions – A multi function program- The form of c functions – Return values and their types – Calling a function – Category of functions – No Arguments and no Return values – Arguments but no return values – Arguments with return values – Handling of non-integer functions nesting of functions- Recursion – functions with arrays – The scope and life time of variables of Variables in functions – ANSI C function. PageNo:247-288

UnitIV

Structure definition-Giving values to members–Structures initialization-Comparison of Structure variables-Arrays of Structures-Arrays within Structures-Structures within structures–Structures and functions- unions- Size of structures-Bit fields.

Pointers-Understanding pointers-Accessing the Address of a Variable–Declaring and initializing pointers-Accessing a variable through its pointers-pointers expressions pointer increments and scale factor-pointers and arrays–pointers and character strings-pointers and functions-pointers and structures.   PageNo:301-324, 333-362.

UnitV

File management in C-Defining and opening a file-closing file-I/O operations on files-Error handling during I/O operations-Random Access to files-Command line arguments–The Preprocessor. PageNo:370-389

TEXT BOOKS:
1. E.Balagurusamy, 'Programming in ANSI C', Tata McGraw Hill Edition 4

REFERENCE BOOKS:
1. Yashavant Kanetkar, 'LetusC',Tata McGraw Hill Edition 2
2. Mulleshcooper, 'SpritofC', Tata McGraw Hill Edition 1
3. Ashok N. Kamadhenu, Programming in C.

Programme: B.Sc IT   Course Title: Core Practical : Programming in C

Subject Code:16UIT1CP1   Year:I   Semester:I
5 Hours/ week   3Credits

LIST OF PRACTICALS

1. Write a program for quadratic equation to find different types of roots.
2. Write program to find prime numbers below1000.
3. Write program to find maximum and minimum now ith the set of numbers.
4. Write a program for two-dimensional matrix addition.
5. Write a program for two-dimensional matrix multiplication.
6. Write program to find a factorial value of given numbers.
7. Write program to find Fibonacci series for n numbers.
8. Write program to find day for given date.
9. Write program to convert integer into words from range1to100.
10. Write program to find Armstrong no for 1to1000.
11. Triangle program.
12. Conversion of decimal to binary.
13. Conversion of binary to decimal.
14. Sum of diagonals of the matrix.
15. Find ncr value using function.
16. To calculate biggest among n numbers using function.
17. String manipulations (user defined functions for strcmp, strcat, strlen, strcpy).
18. To check given string is palindrome or not,with out using string reverse function.
19. To sort a given set of numbers in ascending order.
20. To sort given set of strings using pointers.
21. To count no.of words, lines, characters in a given sentence.
22. To merge the files given.
23. To read one file & write it into another using command line arguments.
24. To print student's result in formation (reg.no., name, percentage) using structures.
25. Write a program to count the occurrence of a character in a given string.

Programme: B.Sc IT

Course Title: Core : Object Oriented Programming with C++

SubjectCode:16UIT2C02   Year: I   Semester: II

5 Hours/ week   4 Credits

COURSE OBJECTIVES

- To learn how C++ supports Object Oriented concepts such as abstraction, polymorphism etc.
- To understand and apply the principles hiding, localization and modularity in software development.
- Use the generic programming features of C++
- Design and implement reliable and maintainable object-oriented applications of moderate complexity composed of several classes.

UNIT I

Principles of object oriented programming: Basic concepts – Benefits – Applications of C++ - Structure of C++ program – Basic datatypes – User Defined Data Types: derived datatypes – Declarations of variables – Operators in C++ - Manipulators – Typecast operator – conversions – Operator overloading – Control Structures. Pages:(7-69)

UNIT II

Functions: Function prototyping – call by reference – return by reference – inline functions – default arguments – Function overloading. Classes and objects: Specifying a class – Defining member functions – Arrays within a class – memory allocation for objects – Arrays of object – objects as function arguments – Constructors – Parameterized constructor – Copy constructor – Dynamic constructor – Destructors.   Pages:(79-164)

UNIT III

Operator overloading & type conversion: Defining operator overloading – Overloading unary operators – Overloading Binary operators – Type conversions. Inheritance: Defining derived class – Single inheritance – Multilevel inheritance – Multiple inheritance – Hierarchical inheritance – Hybrid inheritance – Constructors in derived class. Pages:(177-241)

UNIT IV

Pointers, Virtual functions and Polymorphism: Pointers to Objects – this Pointer – Virtual Functions – Pure virtual functions. Files: Opening and Closing a file – Detecting End – of – File – File pointers and their manipulations – Command – Line Arguments. Pages:(253-353)

UNIT V

Templates: Class templates – Function templates – Overloading of template function – Member function templates. Exception Handling: Basics – Exception handling mechanism - Throwing mechanism – Catching mechanism – Specifying exceptions. Pages:(360-394)

TEXTBOOK

1. E. Balagurusamy, Object Oriented Programming with C++, Tata McGraw Hill publishing company limited.

REFERENCEBOOK

1. Robert Lafore, Object Oriented Programming in Turbo C++, Galgotia Publications Pvt Ltd.
2. Ashok N. Kamadhenu, Object Oriented Programming in C++.

Programme: B.Sc IT

Course Title: Core Practical : Object Oriented Programming with C++

SubjectCode:16UIT2CP2   Year: I   Semester: II

5 Hours/ week   3 Credits

1. Write a C++ program to read an integer and reverse it. Having reversed it check whether it is prime or not.

2. Write a C++ program to find the Largest and smallest value in 'n' numbers.

3. Write a C++ program to count the number of characters, words and lines in a given sentence without using string functions.

4. Write a C++ program to sort the given set of strings.

5. Construct class for primitive data structure Stack operation.

6. Construct class for primitive data structure Queue operation.

7. Write a C++ program for binary search.

8. Write a C++ program to implement Constructors and Destructors in factorial of 'n' numbers.

9. Write a C++ program to implement Copy Constructor.

10. Write a C++ program to implement unary operator overloading.

11. Write a C++ program to implement Binary Operator (+) Overloading for the addition of Complex numbers.

12. Write a C++ program to implement Single inheritance for Employee details.

13. Write a C++ program to implement Multiple Inheritance for Student details.

14. Write a C++ program to implement Friend function for Employee details.

15. Write a C++ program to implement pure virtual function for Student details.

16. Write a C++ program on accessing the Data Members using "this" pointer.

17. Write a C++ program to create a binary file "mark.dat" and store student name, roll no and marks in three subjects using structure.

18. Write a C++ program to create the data file "empinfo.dat"

19. Write a C++ program to find maximum of two data using template function.

20. Write a C++ program to create two different types of objects using class template.

Programme: B.ScIT   Course Title: Core : JAVA Programming

Subject Code:16UIT3C03   Year: II   Semester: III

5 Hours/week   4 Credits

COURSE OBJECTIVES:
- To understand and apply the fundamentals corejava, packages, database connectivity for computing
- To enhance the knowledge to server side programming
- To provide knowledge on advanced features like Swing, JavaBeans, Sockets.

Unit I

Introduction to java-Introduction to Classes-Inheritance Concepts-Packages and Interfaces: Packages–Access protection Importing packages–interfaces. Exception Handling: Fundamentals–Exception types–Using Try and Catch – nested Try–statements throw, throws, finally.   (PageNo:129-246)

Unit II

Multithreaded programming: Thread model–Creating a thread, creating multiple threads–Using Alive0 and join0–synchronization–Interthreaded communication. String Handling: String constructors–string operations–character extraction–string comparison–searching–modification–stringbuffer. (PageNo:273-297,347-376)

Unit III

I/O: File–Stream classes–Byte streams–character streams–serialization–Networking: Basics–TCP/IP client sockets–Net Address–URL–Datagram's.(PageNo:588-620)

Unit IV

Applet: Basics–Architecture–Passing parameters to Applets–Skeleton–Simple Applet – Event handling Event model–Event class–Event listener interface.(PageNo:628-644)

Unit V

Java Beans:-Advantages–Application building tools–Using Bean Developer kit(BDK)-JAR files–Developing simple Bean using the BDK.(PageNo:886-898)
RMI:–A simple client/server applications using RMI–Sockets.(PageNo:587-629)

TextBook:
1. Herbert Schildt, The Complete Reference-java2, TATA McGraw Hill, 2002, FifthEdition

Reference Books:
1. Patrick Naughton, The JAVA Hand Book, TATA McGraw Hill, 1997
2. Harley Haim, The internet computer reference, TATA McGraw Hill, 1998, Second Edition.

Programme: B.Sc IT   Course Title: Core : Data and File Structures

Subject Code:17UIT3C04   Year: II   Semester: III

5 Hours/ week   4 Credits

COURSE OBJECTIVES
- To understand the line a rand non-linear data structures available in solving problems
- To know about the sorting and searching techniques and its efficiencies
- To get a clear idea about the various algorithm design techniques
- Using the data structures and algorithms in real time applications
- Able to analyze the efficiency of algorithm

Unit-I

Algorithm specification **(25-32)** – Performance Analysis **(38-61)**. Arrays: Array as an ADT – Polynomial ADT – Polynomial Representation –Polynomial Addition – Sparse Matrices – Representation of Arrays **(84-112)**. Stacks and Queues: Stacks ADT – Queues ADT.**(134-147)**

Unit-II

Linked lists: Singly Linked Lists and Chains – Representing Chains in C++ **(170-183)** – Circular Lists – Available Space List – Linked Stacks and Queues – Polynomials – Equivalence Classes **(194-215)** – Doubly Linked List – Generalized Lists**(224-240)**.

Unit-III

Trees: Introduction – Binary Trees – Binary Tree Traversal and Tree Iterators **(243-269)** – Threaded Binary Trees **(274-277)**. Graphs: Graphs ADT – Elementary Graph Operation: Depth First Search – Breath First Search – Connected components – Spanning Trees – Bi-connected Components – Minimum Cost Spanning Tree – Shortest Path and Transitive Closure **(324-372)**.

Unit-IV

Internal Sorting: Insertion Sort – Quick Sort **(399-405)** – Merge Sort – Heap Sort **(407-416)**. External Sorting: Introduction – k way Merging Buffer Handling for Parallel Operation – Run Generation – Optimal Merging of Runs **(438-457)**.

Unit-V

Hashing: Introduction – Static Hashing: Hash Table – Hash Function **(458-463)** – Dynamic Hashing **(477-482)** – Efficient Binary Search Trees: Optimal Binary Search Tree – AVL Trees **(553-577)**. Multiway Search Tree **(606-635)**.

TEXTBOOKS:

1. Ellis Horowitz and Sartaj Sahni, Fundamentals of Data Structures, Computer Science Press, 2002 (AllUnits).

REFERENCEBOOKS:

1. Tanenbaum A. M. and Augestine M. J., Data Structures Using Pascal, Prenticehall, 2nd edition, 1996.
2. Yashwant Kanetkar, Data Structures through C, BPB publication, 2003.
3. Sartaj Sahni, Data Structures, Algorithms & Applications in C++. McGraw-Hill, 1998.
4. Samuktha, Data and File Structures, Addison Wesley, 1999.

Programme:B.ScIT

Course Title: Core : Digital Computer Fundamentals and Computer Organization

Subject Code:16UIT3C05   Year: II   Semester: III

4 Hours/ week   4Credits

COURSE OBJECTIVES
- To impart the knowledge in the field of digital electronics
- To impart knowledge about the various components of a computer and its internals.
- To design and realize the functionality of the computer hardware with basic gates and other components using combinational and sequential logic.
- To understand the importance of the hardware-software interface.

Unit–I

Number Systems and Codes: Binary number systems – Binary to decimal conversion – Decimal to Binary conversion – Octal Numbers – Hex decimal Numbers – ASCII Codes – Excess-3 Code – Gray Code. (176-199)

Unit–II

Combinational Logic Circuits: Boolean Laws and Theorems – Sum of Product method – Truth table to Karnaugh Map - Pairs, Quads and Octets – Karnaugh simplifications Don't-care Conditions – Product of sums methods – Product of sums simplifications (77-106). Arithmetic Building Blocks: 2's complement representation - 2's complement arithmetic– Arithmetic building blocks – Adder – Subtract or – FullAdder (218-235).

Unit–III

Data Processing Circuits: Multiplexer – De-multiplexer – Decoder – Encoder – (123-133, 135-136, 144-145) Flip Flops: RS, Edge triggered RS   Flip Flop, Edge triggered D, JK, JK Master Slave Flip Flop – Registers – Asynchronous Counters – Synchronous Counters (274-278, 282-292, 310-325, 340-341, 348-353).

Unit–IV

Programming the Basic Computer: Introduction – Machine language – Assembly languages: rules of the languages – translation to binary (173–183).
Central processing Unit: Introduction – General Register Organizations – Control word – Examples of Micro operations – Stack organization – Instruction Formats – Addressing modes – Data Transfer and Manipulation – Program Control. (241-282).

Unit–V

Input-Output Organization: Peripheral devices - Input-Output Interface – Asynchronous data transfer – Modes of Transfer – Priority Interrupt – Direct Memory Access (DMA) – Input-Output Processor (IOP). (381-429).
Memory Organization: Memory Hierarchy – Main memory – Auxiliary memory – Associative memory – Cache memory – Virtual memory. (381-476).

TEXT BOOK:

1. Donald P. Leach, Albert Paul Malvino and Goutamsaha, "Digital Principles and Applications", Tata McGraw – Hill Publishing Company Limited, Special Indian Edition, Sixth Edition, 2006.(Units I, II, III)
2. M. Morris Mano, "Computer System Architecture", Prentice – Hall of India, Eastern Economy Edition, Third Edition, 2005. (Unit IV, V)

REFERENCE BOOK:

1. Thomas C. Bartee, "Digital Computer Fundamentals", Tata McGraw-Hill Publishing Company Limited, Sixth Edition, 1991. (26th Reprint 2007).
2. John P. Hayes, "Computer Architecture and Organization" – McGraw Hill-International Edition, Third Edition–1998.
3. Thomas C. Bartee, "Computer Architecture and Logical Design", McGraw Hill International Edition, 1998.

Programme : B.Sc IT

Course Title : Allied : Operation Research   Course Code : 15UIT3AL3

Year : II   Semester : III

Hour/Week : 6   Credits : 5

COURSE OBJECTIVES

1. To understand the concepts of Linear Programming Problems.
2. To study and understand the concept of transportation and Assignment problems.
3. To use the knowledge of Inventory, Analyze to solve Replacement problems and real world problems.

UNIT I   **(16 Hours)**

Linear Programming Problem: Introduction – Mathematical formulation of L.P.P. - Graphical solution method – Simplex method – Method of penalties/ Big-M method – Two phase method.   (Chapter 2,3& 4, Page No. 39 - 113)

UNIT II   **(14 Hours)**

Transportation problem: Introduction - finding initial basic feasible solution – moving towards optimality – the transportation algorithm. (Chapter 10, Page No. 247-281)

Assignment problem: Method for solving an assignment problem –Variation of assignment problem – Traveling salesman problem – degeneracy. (Chapter 11, Page No. 295-324)

UNIT III   **(16 Hours)**

Queueing theory: Introduction - Queueing system – Characteristics of the Queueing system – Operating characteristics of a Queueing system - Classification of queues – Poisson queues- (M/M/1) : (∞/FIFO) , (M/M/1) : (N/FIFO) , (M/M/C) : (∞/FIFO) , (M/M/C) : (N/FIFO).(Chapter 21, Page No. 589-621)

UNIT IV   **(16 Hours)**

Inventory: Introduction – Inventory control– Cost associated with inventories – Economic lot size problem – Problems of EOQ with shortage allowed – Purchase inventory problem with price breaks. (Chapter 19, Page No. 507-538)

Replacement problem: replacement of items that deteriorates with time – replacement of items that fail completely. (Chapter 18, Page No. 477-494)

UNIT V   **(13 Hours)**

Networking scheduling by PERT/CPM: Introduction – Basic concepts - Critical path method – pert calculations – pert algorithm – construction of network – critical path analysis - statistical considerations in PERT . (Chapter 25, Page No. 763-784)

TEXT BOOK

1. Kanti Swarup, P.K. Gupta, Man Mohan, Operations Research, Sultan Chand & Sons, 2007, Thirteen Edition.

REFERENCE BOOKS

1. Prof V.Sundaresan, K.S. Ganapathy Subramanian, K.Ganesan, Resource Management
2. Techniques, A.R.Publications, 2004, Second Edition. Handy A.Taha, Operations
3. Research,CollierMacmillan,Third Edition.

Programme: B.Sc IT   Course Title: Core Practical : JAVA Programming

Subject Code:16UIT3CP3   Year: II   Semester: III

4 Hours/ week   3 Credits

1. Write a java program for an Inheritance Concept
2. Write a java program for using Interface
3.   Write a java program for using 2 Packages
4. Write a java program for Constructor using method overloading
5. Write a java program to handle all Exceptions

    a)   Catch   b) Try   c) Throws   and   d) Finally.

6. Write a java program for all String handling methods.
7. Write a java program for a) Single Multithreading   b) Multiple multithreading
8. Write a java program to pass message between 2 clients using TCP/IP Protocol
9. Write a java program for using datagram
10. Write a java program for finding the IP Addresses
11. Write a java Applet program for displaying the Human face
12. Write a java program using AWT events
13. Write a java program for using Swing concept
14. Write a java program using Swing to create a MDI form
15. Write a java program to create personal information
16. Write a java program to create calculator using Swing
17. Write a java program to connect 2 clients system using RMI concept
18. Write a java program to retrieve IP address of the system using RMI concept (client side)
19. Write a java program to create the Basic Bean concept (text)
20. Write a java program to create Bean tool

Programme: B.Sc IT   Course Title: Core Practical : Data Structure using C++

SubjectCode:16UIT3CP4   Year:II   Semester:III

4 Hours/ week   3Credits

1. Write a C++ program to implement a stack.
2. Write a C++ program to convert an Infix Notation to Postfix Notation.
3. Write a C++ program to implement a Evaluate of expression.
4. Write a C++ program to implement a stack using Linked List
5. Write a C++ program to implement a Queue.
6. Write a C++ program to implement a circular queue.
7. Write a C++ program to implement a Queue using Linked List
8. Write a C++ program to construct a Binary Tree Traversal.
9. Write a C++ program to implement a Depth First Search
10. Write a C++ program to implement a Breath First Search.
11. Write a C++ program to implement a Warshall's Algorithm.
12. Write a C++ program to implement a Dijkstra's Algorithm.
13. Write a C++ program to implement an Insertion Sort.
14. Write a C++ program to implement a Merge Sort.
15. Write a C++ program to implement a Heap Sort.

Programme: B.Sc IT   Course Title: Core : VB.NET Programming and RDBMS

Subject Code: 16UIT4C06   Year: II   Semester: IV

6 Hours/ week   5 Credits

COURSE OBJECTIVES:
- The impact of the .NET Framework and Visual Basic .NET on Information Technology Management and web-based applications.
- Assess the provisions in VB.NET for performing component-based programming, exception handling, and interface-based programming; also assess their impact on Information Technology Management.
- The architecture, advantages, and functionality of both ADO.NET and the ActiveX component architecture; also explain the concept of connection pooling.
- To make a study of SQL and relational database design.
- To know about data storage techniques a query processing.
- To impart knowledge in transaction processing, concurrency control techniques and recovery procedures.

Unit I
Essential Visual Basic – Upgrading from Visual Basic - .Net Framework and the CLR – IDE – Building VB.NET Applications. Operators – Conditionals and Loops – Procedures, Scope and Exception Handling. (1-135)

Unit II
Windows Forms – Adding Controls – Handling Events – Creating MDI applications – Text boxes, Rich Textboxes, Labels and link labels – Buttons, Checkboxes, Radio buttons, Panels and Group boxes – List box, Checked list box, Combo box and Picture boxes.(137–299)

Unit III
Windows Forms – Scrollbars, Splitters, Track Bars, Pickers, Notify Icons, Tool tips and Timers. Menus – Built in Dialog Boxes – Image list, Tree and List view, Toolbars, Statusbars and progress bars and tabbed controls. (301–436).

Data Access with ADO.net – binding controls to database – database access with web applications – creating window services, web services and deploying applications. (821-860, 863-896, 959-981, 1042-1064)

Unit IV
Relational Model:– Structure of Relational Databases – The Relational Algebra – Extended Relational Algebra Operations – Modification of the Database – Views – The Tuple Relational Calculus, The Domain Relational Calculus. (79–126)

SQL:– Basic Structure – Set Operations – Aggregate functions – Nested Queries – Derived Relations – Views – Modification of the database. (135-163)

Unit V

Relational Database Design:- First Normal Form – Pit falls in Relational Database Design – Normalization Using Functional Dependencies – Decomposition (257-279) – Normalization Using Multi valued Dependencies – Normalization Using Join Dependencies. (289-293)

TEXT BOOKS:
1. Steven Holzner, Visual Basic.NET Black Book, Dream Tech, First Edition, 2002. **(Unit I, II and III)**
2. A. Silberschatz, H. Korthand S. Sudarsan, Database System Concepts, TATA McGraw Hill Inc., 2002, Fourth Edition. **(Unit IV and V)**

REFRENCE BOOKS:
1. Evangelos Petroustes, Mastering Visual Basic .NET, BPB Publications, First Edition, 2002.
2. Bill Evjen, Jason Beres, etal., Visual Basic .NET Programming Bible, Wiley–Dream Tech, Reprint, 2002.
3. Bipin. C. Desai, An Introduction to Database System, West Publishing Company, 2004.
4. C. J. Date, An Introduction to Database Systems, Addition–Wesley,2007, eighth edition.

Programme: B.Sc IT   Course Title: Core : Computer Networks

Subject Code:17UIT4C07   Year: II   Semester: IV

6 Hours/week   5Credits

COURSE OBJECTIVES:
- To understand networking concepts and basic communication model
- To understand network architectures and components required for data communication.
- To analyze the function and design strategy of physical, data link, network layer and transport layer
- To Acquire knowledge of various application protocol standard developed for internet

Unit I

Introduction: The use of computer networks - Network structures -Network architectures - The OSI Reference model - services. Physical Layer:Transmission Media : Magnetic Media - Twisted pair - Base band Coaxial cable - Broad band Coaxial cable - Fiber optics Narrow band - ISDN : ISDN - Services - ISDN System Architecture - ISDN Interface - Perspective on N-ISDN

Unit II

Datalink Layer : Datalink Layer Design Issues : Services Provided to Network Layer - Framming - Error control - flow control Error Detection and Correction : Error Correcting Codes - Error Detecting Codes Elementary Datalink Protocols : An Unrestricted Simplex Protocol - A Simplex Stop and Wait Protocol - A Simplex Protocol for a noisy Channel.

Unit III

Network Layer: Network Layer Design Issues - Services provided to the Transport Layer Routing Algorithm: Optimality Principle - Shortest path routing - Flooding - Flow based routing - Hierarchical routing - Broadcast routing- Multicast routing - Congestion Control : General Principles of Congestion Control - Congestion Prevention Policies - Traffic Shapping - Flow Specification - Congestion Control in Virtual Circuit Subnets - Choke Packets - Load Shedding

Unit IV

Transport Layer: Transport Services: Services provided to the Upper layers - Quality of Service - Transport Service Primitives -Elements of Transport Protocols: Addressing - Establishing a connection -Releasing a Connection - Flow Control and Buffering - Multiplexing- Crash Recovery.

Unit V

Application Layer : Network Security : Traditional Cryptography -Two Fundamental Cryptographic Principles - Secret-key Algorithm - Public key Algorithm - Authentication Protocol - Digital Signatures - Domain Name System : DNS Namespace - Resource Record - Name Server -Electronic Mail : Architecture and Services - User Agent - Message Formats - Message Transfer - E-mail Privacy

TEXT BOOK:

1. Andrew S Thenanbaum - Computer Networks 3rd Edition - Prentice Hall of India, 2003
2. Douglas E.Comer,DavidL.Stevens Internetworking with TCP/IP Prentice Hall of India, 2003 (Volume III)

REFERENCE BOOK:

1. William Stallings Data and Computer Communication Fifth edition Prentice Hall of India.

Programme: B.Sc IT

Course Title: Core Practical : VB.NET Programming and RDBMS

Subject Code:16UIT4CP5 Year: II Semester: IV

5 Hours/ week 3 Credits

(VB.NET)

1. Write a vb-net program to create a notepad with find & replace option.

2. Write a vb-net program to create a word pad using rich text box

3. Write a vb-net program to create an MDI form

4. Write a vb-net program to create an explore a file (tree view list view split container)

5. Write a vb-net program to validate text box using inheritance

6. Write a Vb-net program to set the Progress bar using timers

7. Write a Vb-net program to trace the mouse

8. Write a Vb-net program to handle user Events

9. Write a vb-net program to perform various arithmetic operations using calculator

10. Write a vb-net program to add information's using Data grid control

11. Prepare a payroll for the employees using vb-net

(RDBMS)

1. Creation of a Database and writing SQL queries to retrieve information from the database.

2. Performing Insertion, Deletion, Modifying, Altering, Updating and Viewing records based on conditions

3. Creation of Views, Synonyms, Sequence, Indexes, Save point

4. Creating an Employee Database to set various constraints

5. Creating relationship between the databases

6. Write a PL/SQL block to satisfy some conditions by accepting input from the user.

7. Write a PL/SQL block that handles all types of exceptions

8. Creation of Procedures

9. Creation of database triggers and Functions

Programme: B.Sc IT

CourseTitle: Core Practical : Web Technology – I (HTML and XML)

Subject Code: 16UIT4CP6   Year: II   Semester: IV

5 Hours/ week   3 Credits

1. Write a HTML Program to format the text using all suitable HTML Tags.
2. Write a HTML Program to include an image in the webpage using suitable HTML tag.
3. Write a HTML Program to include a picture as a background image with suitable tags.
4. Write a HTML Program to demonstrate heading tags.
5. Write a HTML Program to draw a table containing the semester marks of a student.
6. Write a HTML Program to demonstrate frames.
7. Write a HTML Program to demonstrate form.
8. Write a HTML Program to demonstrate various lists available in HTML.
9. Write a HTML Program to demonstrate hyperlinks.
10. Write a HTML Program to create are sum of yours using HTML tags.
11. Write a HTML Program to create the semester mark statement of our college student.
12. Write a HTML Program to that uses internal cascading stylesheets in your HTML program.
13. Write a HTML Program to that uses external cascading stylesheets in your HTML program.
14. Write a HTML Program to display the employee pay slip.
15. Write a HTML Program to create static website for our college.
16. Write a XML document that displays the details about a student.
17. Write a XML document that displays the details of the customers.
18. Write a XML document which uses a DTD file for its style.
19. Write a XML document which uses XSL for its style.
20. Write a XML document using proper DTD to create your resume.

Programme: B.Sc IT   Course Title: Core : C#.NET Programming

Subject Code: 16UIT5C08   Year: III   Semester: V

4 Hours/ week   4 Credits

COURSE OBJECTIVES
- To know the concept of OOP and how it will be implement
- To know how to use polymorphism in effective ways
- Have improved your object-oriented analysis skills
- Be able to identify classes in their problem domain by multiple techniques
- Understand which code qualities are essential for writing maintainable code

C#.NET

Unit–I
An overview of C# **(11-36)** – Data Types, Literals and Variables **(37-64)** – Operators **(65-86)** – Program control statements **(87-110)**

Unit-II
Introducing Classes and Objects **(111-137)** – Arrays and Strings **(140-166)** – **A Closer Look at Methods and strings:** Method Overloading – TO – Static Classes **(195-220)** – Operator Overloading **(221-252)**

Unit- III
Inheritance **(277-318)** – Interface, Structure and Enumerations **(319-344)** – Exception Handling **(345-370)** – Namespaces, the Preprocessor and Assemblies **(449-470)**

Unit-IV
Generics **(507-554)** – Un-safe code, Pointers, Nullable types, Dynamic types and Miscellaneous types **(605-633)** – Multithreaded Programming, Part One **(735-782)**

Unit-V
Delegates, Events and Lambda Expressions **(411-431)** – Networking through the internet using System .Net **(895-920)**

TEXT BOOK:
   1. Herbert Schildt, "C# 4.0 Complete References", Tata McGraw-Hill Edition

REFERENCES BOOK:
   1. Geetanjali Arora, Balasubramaniam Aiswamy, and Nitin Pandey "*Microsoft C# Professional Projects"* Prentice Hall of India Private Limited.

Programme: B.Sc IT   Course Title: Core: Operating System

Subject Code: 16UIT5C09   Year: III   Semester: V

5 Hours/ week   5 Credits

COURSE OBJECTIVES:
- To be aware of the evolution and fundamental principles of operating system, processes and their communication.
- To underst and the various operating system components like process management, memory management, I/O management and file management.
- To know about file management and the distributed file system concepts in operating systems
- To be aware of components of operating system with relevant case study

Unit I

INTRODUCTION: What is an Operating System? – Mainframe Systems – Desktop Systems – Multiprocessor Systems – Distributed Systems – Clustered System - Real-Time Systems – Handheld Systems. Operating – System Structures:- System Components - Operating-System Services – System Calls – System Programs – System Structure – Virtual Machines. (Pages3-19,55-80)

Unit II

PROCESS MANAGEMENT: Process Concept – Process Scheduling – Operations on Processes – Cooperating Processes – Inter process Communication. CPU Scheduling:- Basic Concepts – Scheduling Criteria – Scheduling Algorithms – Multiple – Processor Scheduling - Real-Time Scheduling. Deadlocks:- System Model – Deadlock Characterization – Methods for Handling Deadlocks – Deadlock Prevention – Deadlock Avoidance – Deadlock Detection – Recovery from Deadlock. (Pages95–109,151-170, 243- 264)

UnitIII

STORAGE MANAGEMENT: Memory Management:- Background – Swapping – Contiguous Memory Allocation – Paging – Segmentation – Segmentation with Paging. Virtual Memory:- Background – Demand Paging – Process Creation – Page Replacement – Allocation of Frames - Thrashing. (Pages273-309,317–348)

Unit IV

File-System Implementation:- File-System Structure - File-System Implementation – Directory Implementation – Allocation Methods - Free-Space Management. Mass-Storage Structure:- Disk Structure – Disk Management – Swap – Space Management –RAID Structure – Disk Attachment – Stable – Storage Implementation - Tertiary-Storage Structure. (Pages411–430,491–516)

Unit V-

    CASESTUDIES: Windows 2000: History – Design Principles – System Components – Environmental Subsystems – File System – Networking – Programmer Interface. Windows XP: History – Design Principles – System   Components – Environmental Subsystems – File System – Networking – Programmer Interface. (Pages743-780,789–839)

TEXT BOOK:

1. SILBERSCHATZ, GALVIN, GAGNE, OPERATING SYSTEM CONCEPTS, Wiley India Edition (sixth edition), 2007

REFERENCE BOOKS:

1. Deitel Deitel Choffnes, Operating Systems, Pearson Education (third edition), 2003.
2. Stuart E. Madnick, John J. Donovan, Operating Systems, Tata McGraw Hill (third edition), 2003.

Programme: B.Sc IT

Course Title: Core : Web Technology – II (PHP, Ajax and Joomla)

Subject Code: 16UIT5C10   Year: III   Semester: V

4 Hours/ week   4 Credits

COURSE OBJECTIVES
- Gain the PHP programming skills needed to successfully build interactive, data-driven sites
- Use the MVC pattern to organize code
- Test and debug a PHP application
- Work with form data
- Use cookies and sessions
- Work with regular expressions, handle exceptions, and validate data

PHP&MYSQL

Unit–I

Introducing PHP (1-18) – Using Variables and Operators (21-45)– Controlling program flow (49-82)–Working with cookies, sessions and headers(293–308).

Unit–II

Working with arrays (85-118)–Using functions and classes (121-148)–Working with files and directories (159-180)– Working with databases and SQL(185-246)

AJAX

Unit–III

Getting started with Ajax (433-435)–Writing Ajax (435)–Creating and Opening XML HttpRequestobject (436-440)– Handling & Starting the Downloaded data(441-447)–Ajax with Some PHP (448)– Passing Data to the Server with GET&POST(449-455).

Introduction to JQuery (1-8)– Element getters and setters(13-21)–Altering document structure (25-29)–Events and Animated Effects (31-58)–Ajax and Utility functions(63-88)– JQuery with plugins(103-108).

JOOMLA

Unit–IV

Understanding Joomla(3-7)–Installing Joomla(25-39)–At our of the joomla administrator interface (41-49)–Defining Section and Creating Structure(53-57)– Creating,editinganddeletingsections,categoriesandarticles(59-83)–Joomlamenus(125-166)– JoomlaTemplatesandmodules(169-228).

Unit–V

MeetYii(7-15)–Gettingstarted(17-32)–Creatingtheinitialtrackstarapplication(53-59)–ProjectCRUD(61-90)–AddingTasks(93-141)–Usermanagementandauthentication(147-169).

TEXT BOOKS
1. A Beginner's Guide PHP, Vikram Vaswani, Tata McGraw Hill, First Edition - (Unit I and II)
2. PHP Complete Reference, Steven Holzner, Tata McGraw Hill, First Edition – (Unit III)
3. JQuery Pocket Reference, David Flanagan, ORelly, First Edition – (Unit III)
4. Joomla, Jen Kramer, Wrox Programmer to Programmer, First Edition – (Unit IV)
5. Web Application Development with Yii and PHP, Jeffrey Winesett, Packt Publications – Second Edition (Unit V)

Programme: B.Sc IT   Course Title: Core Practical : C#.NET Programming

Subject Code: 16UIT5CP7   Year: III   Semester: V

4 Hours/week   3 Credits

1. Write the C#.Net program to perform the Command Line Argument.

2. Write the C#.Net program and perform Quadratic Equation

3. Write the C#.Net program to find Second Largest Number

4. Write a C#.Net program and perform the concept of Matrix Multiplication.

5. Write a C# program to find the sum of all elements present in a jagged array of 3 inner arrays.

6. Write a C#.Net program to perform various string operations.

7. Write a C#.Net program to demonstrate Method Overloading

8. Write a C#.Net program to demonstrate Operator Overloading

9. Write a C#.Net program using abstract class and methods

10. Write a C#.Net program using interface

11. Write a C#.Net program to perform divide by zero exception using try and catch block.

12. Write a C#.Net program and demonstrate the concept of multithreading

13. Write a C#.Net program and perform the concept of using properties

14. Write a C#.Net program and perform the concept of using delegates

15. Write a C#.Net Windows application program to perform the student Information.

Programme: B.Sc IT

Course Title: Core Practical : Web Technology – II (PHP, Ajax and Joomla)

Subject Code: 16UIT5CP8   Year: III   Semester: V

4 Hours/ week   3 Credits

1. Find the following program using PHP

   Sum of 10 numbers
   Fibonacci sequence of 10 Numbers
   Area of the circle for the radius of r =8

2. Find the following program using PHP
   Ascending and Descending order of n numbers
   Using PHP date function print the following expression March 10, 2008, 5:16 pm Sat
       Mar 10 15:16:08 MST 2008

3. Using PHP program read and print a file character by character, until the end of file is reached.

4. Using PHP string function to convert lowercase, uppercase, string length, string compare, string reverse, and string shuffle.

5. Using PHP connect MySql and save the following data into the respective MySql table.
   Student Name
   Student RegNo
   Age
   Department

6. Using PHP connect MySql and view contents of the previous program saved details.

7. Using PHP connect MySql and view contents and made delete operation in it.

8. Using PHP connect MySql and view contents and made edit operation in it.

9. Using PHP with MySql develop one small application in online job portal.

10. Using PHP with MySql develop online exam.

11. Using PHP with MySql develop an alumni registration form with image uploading.

12. Using PHP, AJAX and MySql create your class profile using add, view, edit and delete modes with image and music file uploading.

Programme: B.Sc IT   Course Title: Core: Mobile Application Development

Subject Code: 16UIT6C11   Year: III   Semester: VI

5 Hours/week   5 Credits

COURSE OBJECTIVES:
- Describe those aspects of mobile programming that make it unique from programming for other platforms
- Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces
- Program mobile applications for the Android operating system that use basic and advanced phone features
- Deploy applications to the Android market place for distribution.

Unit–I
Introducing Android: Before we get started – Advantages of android – Preparing SDK tools to download – Android development IDE – Java, XML and how android works – Android application framework – Screen layout design – User Interface Design – Graphics and animation Design – Interactivity – Content providers – Intent and intent filters. (PgNo: 1-19).

Unit–II
Setting up your android development environment – Installing Java, Eclipse and Android – Setting up AVDs and Smart Phone – Understanding Java SE and the Dalvik Virtual Machine – The directory structure of an android project – Leveraging android XML – Using your android application resources – The Android Manifest.xml file – Creating your first android application. (PgNo: 21-85)

Unit–III
Android application components – **Android Intent Objects:** Messaging for Components – **Android Manifest XML:** Declaring Your Components – Android View Hierarchies – Defining Screen Layouts: Using XML. (PgNo: 115-160)

Unit–IV
UIDesign: Buttons, Menus and Dialogs – Using Android UI Elements (Widgets) – Adding an Image Button to Your Layout – Adding a Text View Widget to Your Layout – Adding an Image – Using Menus in Android – Creating the Menu Structure with XML – Defining Menu Item Strings – Inflating the Menu Structure via Java – Running the Application in the Android Emulator – Making the Menu Work – Adding Dialogs – Using Custom Dialog Subclasses – Displaying an Alert Dialog. (PgNo:163-207)

Unit-V
Adding Interactivity: Handling UI Events – An Overview of UI Events in Android – Hand line onClickEvents – **Android Touchscreen Events:** on Touch – **Android Right-clickEquivalent:** onLongClick – **Key Event Listeners:** onKeyUpandonKeyDown – **Context Menus in Android:** onCreateContextMenu. (PgNo: 235-266)
Understanding Content Providers: An Overview of Android Content Providers – Defining a Content Provider – Working with a Database.

TEXT BOOKS:
1. Wallace Jackson, Android Apps for Absolute Beginners, 2nd Edition, A Press, 2013.

REFERENCEBOOKS:
1. Shawn Van Every "Pro Android Media: Developing Graphics, Music, Video, and Rich Media Apps for Smart phones and Tablets"

Programme: B.Sc IT   Course Title: Core: Software Engineering

Subject Code: 16UIT6C12   Year: III   Semester: VI

5 Hours/week   5 Credits

COURSE OBJECTIVES:
- To provide an insight into the processes of software development
- To understand and practice the various fields such as analysis, design, development, testing of Software Engg.
- To develop skills to construct software of high quality with high reliability
- To apply metrics and testing techniques to evaluate the software.

Unit I

Introduction to Software Engineering: The Evolving Role of software – Software – The changing Nature of software – Legacy Software C1(33-45) – Process Models: prescriptive Models, The waterfall Model, Incremental Process Models, Evolutionary Process Models – Specialized Process Models – Unified Process C3(78-99)

Unit II

Requirements Engineering: Requirements Engineering Tasks – Initiating the Requirements Engineering Process – Eliciting Requirements – Developing Use cases – Building the Analysis Model – Negotiating Requirements – Validating Requirements C7(176-203)

Unit III

Design Engineering: Design Process and Design Quality – Design Concepts – The Design Model C9(261-279) – Data design C10(289 -290) – Architectural Design C10(298-303) – Mapping Data Flow into a Software Architecture C10(307–320)

Unit IV

Testing Tactics: Software Testing Fundamentals – Black box and White box testing – White box Testing – Basis path Testing – Control Structure Testing – Black box Testing. C14(421-441) – TESTING FOR WEB APPS: Content Testing – User Interface Testing – Component Level Testing – Navigation Testing – Configuration Testing – Security testing – Performance Testing C20(601-621)

Unit V

RISK MANAGEMENT: Software Risks – Risk Identification – Risk Projection – Risk Refinement – Risk Mitigation, Monitoring, And Management C25(728-739) QUALITY MANAGEMENT: Quality Concepts – Software Quality Assurance – Software Reviews – Formal Technical Reviews – Formal Approaches to SQA C26(745-759) –Software Reliability C26(762-764)

TEXT BOOK
1. ROGER S. PRESSMAN, SOFTWARE ENGINEERING A practitioner's Approach, McGraw-HILL, 2005 – Sixth Edition,

REFERENCE BOOK
1. Richard fairly, Software Engineering concepts:, McGRAW-HILL, 2006

Programme: B.Sc IT   Course Title: Core: Cyber Security

Subject Code: 17UIT6C13   Year: III   Semester: VI
6 Hours/week   5 Credits

COURSE OBJECTIVES
- To understand the basic concepts cyber security
- Identify the key components of cyber security
- Identify security tools and hardening techniques
- Distinguish system and application security threats and vulnerabilities

Unit:I
Systems Vulnerability Scanning: Overview of vulnerability scanning, OpenPort/Service Identification, Banner/Version Check, Traffic Probe, Vulnerability Probe, Vulnerability Examples, Open VAS, Metasploit. Networks Vulnerability Scanning - Netcat, Socat, understanding Port and Services tools – Data pipe, Fpipe, Win Relay, Network Reconnaissance – Nmap, THC – A map and System tools. Network Sniffers and Injection tools – Tcpdump and Windump, Wireshark, Ettercap, Hping Kismet .

Unit:II
Network Defense tools: Firewalls and Packet Filters: Firewall Basics, Packet Filter Vs Firewall, How a Firewall Protects a Network, Packet Characteristic to Filter, Stateless Vs Stateful Firewalls, Network Address Translation (NAT) and Port Forwarding, the basic of Virtual Private Networks, Linux Firewall, Windows Firewall, Snort: Introduction Detection System.

Unit: III
Web Application Tools: Scanning for web vulnerabilities tools: Nikto, W3af, HTTP utilities - Curl, Open SSL and Stunnel, Application Inspection tools – Zed Attack Proxy, Sqlmap. DVWA, Webgoat, Password Cracking and Brute – Force Tools – John the Ripper, L0htcrack, Pwdump, HTC– Hydra

Unit:IV
Introduction to Cyber Crime and law: Cyber Crimes, Types of Cyber crime, Hacking, Attack vectors, Cyber space and Criminal Behavior, Clarification of Terms,Traditional Problems Associated with Computer Crime, Introduction to Incident Response, Digital Forensics, Computer Language, Network Language, Realms of the Cyberworld, A Brief History of the Internet, Recognizing and Defining Computer Crime, Contemporary Crimes, Computers as Targets, Contaminants and Destruction of Data, Indian IT ACT 2000.

Unit : V
Introduction to Cyber Crime Investigation: Firewalls and Packet Filters, password Cracking, Key loggers and Spyware, Virus and Warms, Trojan and backdoors, Steganography, DOS and DDOS attack, SQL injection, Buffer Over flow, Attack on wireless Networks

TEXT BOOKS:
1. Anti- Hacker Tool Kit (Indian Edition) by Mike Shema, Publication McGraw Hill.
2. Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Nina Godbole and Sunit Belpure, Publication Wiley

REFERENCE BOOKS:
1. William Stalling, Cryptography and Network Security, 4th Edition, PHI, 2006

2. Schneier and Bruce, Applied Cryptography: Protocols & Algorithms, 1st Edition, 2015.

Programme: B.Sc IT

Course Title: Core Practical : Mobile Application Development and Multimedia

Subject Code: 16UIT6CP9   Year: III   Semester: VI

4 Hours/ week   3 Credits

Photoshop Lab Programs:
1) Create an invitation design using Photoshop.
2) Create a layer animation using Photoshop.
3) How to apply layer style in font using Photoshop?
4) Apply the filter effect in image using Photoshop.
5) Create a web index page using Photoshop.
6) Create a logo design by Photoshop.
7) Use morphing techniques using Photoshop.

Flash Lab Programs:
1) Create a natural scenery using flash.
2) How to create a glossy button using flash?
3) Apply the filter effect in image or font using Flash.
4) Trace the image using flash.
5) Create a Text animation using Flash.
6) Create a movie clip animation using Flash.
7) Create a symbol and guide layer using flash.
8) How to create a mask by flash?

Corel Draw Lab Programs:
1) Create a logo design using Corel draw
2) Create a banner design using Corel draw
3) Create a corporate ID card design using Corel draw
4) Create a wedding Card design using Corel draw
5) Create a Certificate design using Corel draw
6) Create a 3D Text effect using Corel draw
7) Create a T-Shirt design using Corel draw
8) Create a CD wrapper design using Corel draw
9) Create a Template design using Bitmap effects in Corel draw

Mobile Application Development

1. Write the steps for installation and configuration of android in Windows OS.
2. Write a program to demonstrate usage of two text box(EditText), Label(Textview) and Buttonwidgets in android and perform addition of two numbers.
3. Write a program and demonstrate the graphical layout orientation.
4. Write a program and fetch the IMEI number of your mobile phone.
5. Write a program to demonstrate usage of Date Time Picker with Toast(Message Box).
6. Write a program to demonstrate usage of ListBox, ComboBox, Snippers with Toast (Message Box).
7. Write a program, create and send notification message in your mobile phone.
8. Write a program to demonstrate usage of TextArea, CheckBox, RadioButton with Toast (Message Box).
9. Write a program and calculate the simple interest and compound interest using its API controls.
10. Write a program and create phone call activity using android.
11. Write a program for sending SMS using android.
12. Write a simple program to demonstrate the contact manager using Contacts Contract API (Insert, Delete, Edit, View).
13. Write a simple program to demonstrate connecting with SQLite Database.
14. Write a program and save student information with SQLite Database.
15. Write a program and view student information from SQLite Database.

Programme	: B.Sc Information Technology		
Course Title	: Core : Project Work and Viva-Voce	Course Code	: 16UIT6CPR
Year	: III	Semester	: VI
Hour/Week	: 5	Credits	: 5

COURSE OBJECTIVES

Enable the Students to

1. Understand the importance of experimental analysis, scientific approach in solving problems of information Technology.

2. Educate and train the students on how to design the system and develop the system and prepare the reports.

The Final Year Students are assigned to the project Supervisor and they are asked to submit an individual project report at the end semester. The Broader areas of the project are website creation, order processing, Billing Software, Multimedia, Artificial Intelligence, and Machine Learning based projects.

The student has to approach the nearby companies to get approval from the company to undergo his project work for the period of 8 to 9 months.

The students have to submit the project Completion Letter from the organization.

The project work done by the student is periodically reviewed.

Programme : B.Sc IT

Course Title: Elective : Artificial Intelligence and Expert System

Subject Code: 16UIT5EL1   Year: III   Semester: V

4 Hours / week   4 Credits

COURSE OBJECTIVES
- Basic principles and techniques of artificial intelligence will be covered.
- Concepts of knowledge representation including formalized symbolic logic, inconsistency and uncertainty, probabilistic reasoning, and structured knowledge will be presented.

UNIT I
Introduction-Definition of AI,TASK Domain-underlying Assumption, Criteria for Success, State Space, Production Systems, problem characteristics, production system characters.

UNIT II
Heuristic searches Techniques-Generate and test, Hill-Climbing, Best-First search, Problem Production, Constraint satisfaction, Means-end Analysis.

UNIT III
Knowledge Representation-approaches and issue-Methods-Production Rules, Semantic nets, Frames & Scripts.

UNIT IV
Expert systems-definition, architecture, characteristics, Advantages & Disadvantages. Development stages of an expert systems-characteristics of problem chosen for Expert system development-application areas of Expert system.

UNIT V
Study of Expert System (Overview, facilities, interfacing process, certainly factor calculations)-MYCIN, PROSPECTOR, XCON/R1.

TEXT BOOKS:
1. ELLINE RICH & KEVINKNIGHT, Artificial Intelligence, Tata Mc Graw Hill, 1991.
2. DONALD A.WATERMANN, A Guide to Expert Systems, Addison Wesley.

Programme : B.Sc IT   Course Title: Elective : Cloud Computing

Subject Code: 16UIT5EL1   Year: III   Semester: V

4 Hours / week   4 Credits

COURSE OBJECTIVES

- To introduce the broad perceptive of cloud architecture and model
- To understand the concept of Virtualization and design of cloud Services
- To be familiar with the lead players in cloud.
- To understand the features of cloud simulator
- To apply different cloud programming model as per need.
- To learn to design the trusted cloud Computing system

Unit – I

Introduction to Cloud – Emergence of Cloud Computing – Types of cloud- Cloud-Based Service Offerings – Grid Computing or Cloud Computing – Benefits of using a Cloud Model — Key Characteristics – Cloud Models – Challenges for the Cloud. (Page no. xxiv - xxxviii)

Unit – II

Web Services from the Cloud: Communication-as-a-Service(CaaS) –Advantages of CaaS– Infrastructure-as-a-Service(IaaS)–Monitoring-as-a-Service(MaaS) – Platform-as-a-Service(PaaS) – Software-as-a-Service(SaaS) - SaaS Implementation Issues-characteristics – Benefits.(Page no.29-54)
.

Unit – III

Building Cloud Networks: Evolution from the MSP Model to Cloud Computing and Software-as-a-Service –Cloud Data Center (CDC) – Collaboration – Service-Oriented Architectures as a step toward Cloud Computing- Basic Approach to a Data Center-Based SOA –Role of Open Source Software in Data Centers.(Page no.57-77).

Unit –IV

Federation in the cloud-Levels of Federation-Federated services and Applications-Protecting and controlling federation- Future of Federation- Presence in the cloud- privacy and its relation to cloud-based Information system.(Page no.129-151).

Unit – V

Security in the Cloud: Cloud Security Challenges- Software-as-a- service security- Third party risk management-Security Architecture Design- Secure software Development Life Cycle- Data security-Application security- Virtual Machine Security.(Page no.153-181)

Text Books:
1. Cloud Computing Implementation, management and security, John W.Rittinhhouse, James F.Ransome CRC Press.

Reference Book:
1. Cloud Computing A Practical Approach, Anthony T.Velte, Toby J.Velte, Robert Elsenpeter, Tata McGraw Hill

Programme : B.Sc IT   Course Title: Elective : Client/Server Technology

Subject Code: 16UIT5EL1   Year: III   Semester: V

4 Hours / week   4 Credits

COURSE OBJECTIVES
- Understand the strategic potential of distributed computing systems for business processes.
- Understand the role of the transaction processing, object-oriented, and Internet-based technologies in distributed enterprise computing and make decisions about how and when to apply them.
- Understand the factors that contribute to the performance of client/server systems and incorporate this understanding in the design of client/server systems.
- Understand the many issues, tradeoffs, and decision points in developing, integration, and managing distributed applications.

UNIT I

Introduction: Client/server computing era-File Server-database server-transaction server-Groupware server-object server-web server.(Page no.7-15).Client/server building blocks:-Intergalactic client/server-2-tier-client/server building blocks.(Page no.20-32).

UNIT II

Operating Systems:-Anatomy of a Server program-base service-extended service-scalability.(Page no.57-65).Clients:-Clients anatomy-non-GUI client's-GUI clients-OOUI Clients-GUI versus OOUI-OOUI's on steroids.(Page no.66-74).

UNIT III

NOS:-NOS middleware-extending the local OS's reach-Global directory services-distributed time services-Distributed security(Page no.99-112).RPC:-Peer-to-Peer communications – sockets – names – pipes – RPC – MOM middleware – MOM versus RPC. (Page no.115-130).

UNIT IV

SQL databases servers:-Fundamentals of SQL & Relational Databases-ISO Standards-Stored procedure triggers and rules.(Page no.150-170).Data Warehousing:-OLTP-data warehouse-Data Mining-TP monitors(Page no.200-234,276-282)

UNIT V

Client/server Group ware:-Group Ware-components of Group ware(Page no.319-352).Client server with distributed objects:-Distributed objects to components-CORBA OMG's object management architecture client/server and the Internet(Page no.379-426).

TEXT BOOK:

1. The Essential Client/Server Survival Guide,Robert Orali Dan Harkey and Jeri Edwards, Galgotia Publications Pvt.Ltd.,Second edition,1999.

Programme : B.ScIT

Course Title: Elective : Data Mining and Warehousing

SubjectCode:16UIT5EL1   Year: III   Semester:V

4 Hours/week   4 Credits

COURSE OBJECTIVES:
- To expose the students to the concepts of Data warehousing Architecture and Implementation
- To learn to use association rule mining for handling large data
- To understand the concept of classification for the retrieval purposes
- To know the clustering techniques in details for better organization and retrieval of data

Unit I

Expanding universe of data – production factor – computer systems that can learn – data Mining – data mining versus query tools – data mining in marketing – practical application. (Chapter:1,PageNo.:1-10). Learning – Self Learning Computer Systems – machine learning and the methodology of science – concept learning. (Chapter:2,PageNo.:11-22)

Unit II

Data warehouse – need – designing decision support systems – integration with data mining - Client/Server and data warehousing – multi-processing machines – cost justification. (Chapter:3,PageNo.:25-36)

Unit III

Knowledge discovery process– data selection – cleaning – enrichment – coding – datamining – preliminary analysis of the data set using traditional query tools – visualization techniques – likelihood and distance – OLAP tools – K-nearest neighbor – Decision trees – Association rules –Neural networks – Genetic algorithms – Reporting. (Chapter:4,PageNo.:37-78)

Unit IV

Different forms of knowledge – Getting started – Data Selection – Cleaning – Enrichment – Coding – Data mining – Reporting – KDD environment – Ten golden rules. (Chapter:5,PageNo.:79-93)

Unit V

Customer Profiling – Predicting bid behavior of pilots – Discovering foreign key relationships - Results. (Chapter:6, PageNo.:95-110) Learning as compression of data sets – The information content of message – Noise and redundancy – significance of noise – Fuzzy data bases – The traditional theory of the relational database – from relations to tables – from keys to statistical development Dependencies – Denormalization – Data Mining Primitives. (Chapter:7,PageNo.:111-126)

TEXT BOOK
1. Peter Adriansand DOLF Zantinge, DataMining, Addition Wesley, 2002, Fourth Edition (All Units)

REFERENCE BOOK:
1. 1. K. P. Soman, Shyam Divakar, V. Ajay, Insight into Data Mining (Theory and Practice), Prentice Hall of India, 2006, Second Edition.

Programme : B.Sc IT

Course Title: Elective : Geographical Information System

Subject Code: 16UIT5EL1   Year: III   Semester: V

4 Hours / week   4 Credits

COURSE OBJECTIVES
- Understand the basic concepts of Geological information systems.
- To provide an exposure to spatial database structures and their utility in GIS.
- Understand the process of scanning, digitizing and geo referencing.
- To introduce the raster and vector geo processing capabilities of GIS.

Unit I

        Introduction – Defining GIS – Component of GIS – Spatial Data – Maps and their influence on the characteristic of spatial data – Thematic characteristic of spatial data – Other sources of spatial data.

Unit II

        Spatial data Modelling – Entity definition – Spatial data model – Spatial data structures – Modelling surfaces – Modelling networks – Building computer worlds – Modelling the third dimension – Modelling the fourth dimension.

Unit III

        Introduction – Database data models – Creating a database – GIS database applications – developments in databases – Methods of data input – Data editing – Towards an integrated database.

Unit IV

        Measurements in GIS – lengths perimeters and areas – Queries – Reclassification – Buffering and neighborhood functions – Integrating data map overlay – spatial interpolation – Analysis of surfaces – Network analysis.

Unit V

        Analytical modeling in GIS – Process Models – Modeling physical and environmental process – Modelling human process – modeling the decision making process – Problems with using GIS to model spatial process – Maps as output – Non-cartographic output – GIS and spatial decision support.

TEXT BOOK:
1. An introduction to GIS – Ian Heywood, Sarah Cornelius – Pearson Education 2003.

Programme : B.Sc IT

Course Title: Elective : Analysis and Design of Algorithms

Subject Code: 17UIT6EL2   Year: III   Semester: VI

5 Hours / week   5 Credits

COURSE OBJECTIVES
- To get a clear idea about the various algorithm design techniques
- Using the data structures and algorithms in real time applications
- Able to analyze the efficiency of algorithm

UNIT I
Introduction-Algorithm-Algorithms in SPARKS, Structured Programs-Stack and Queues-Trees-Graphs-Hashing.

UNIT II
Divide and Conquer Gondola Method, Binary Search, Maximum and Minimum-Merge and Quick Sort-Selection-Straggens matrix multiplication.

UNIT III
Greed's method-General method-Optimal storage on tapes-Knapsack problem-Job scheduling with deadlogs-Optimal merge patterns-minimum spanning tree-Single Source Shortest path.

UNIT IV
Dynamic Programming-General method-multistage graphs-All pairs shortest path-Optimal search trees-0/1 Knapsack-Reliability Design-The traveling salesperson problem-Basic search and traversal techniques-Code Optimization AND/OR graph, game trees, Biconnecter components and depths first search.

UNIT V
Back tracking-General method-The 8 Queen Problem-San of Subjects-graph coloring, hamiltonian cycles-Knapsack problem-Branch and bound-0/1-knapsack problem traveling salesperson.

TEXT BOOK:
1. Fundamentals of Computer Algorithm,Ellis Horowitz and Sartaj Sahni.

Programme : B.Sc IT   Course Title: Elective : Embedded System

Subject Code: 17UIT6EL2   Year: III   Semester: VI

5 Hours / week   5 Credits

COURSE OBJECTIVES

- To understand the architecture and functions of PCI microcontroller
- To Learn Assembly language programming
- To understand the basics of RTOS and to learn the method of designing a real time systems

UNIT I:

PIC Microcontroller(16F87XX)- Introduction-Hardware architecture-pipelining-program memory-considerations-register file structure and addressing mode-CPU registers-instruction set-simple operations.

UNIT II:

External Interrupts and Timers-   Overflow-RBo/INT external interrupt input capture mode-compare mode-timer 1/CPP-programmable -Timer 1 External event counter-timer 1 sleep mode-PWM output-port B change interrupts.

UNIT III:

Peripherals-   Initialization and programming of I2C bus for Peripherals chip access-A/D converter-UART.

UNIT IV:

I/O Port Expansion-   Synchronous serial port module-serial peripherals interface-output port expansion-input port expansion-LCD display.

UNIT V:

Software Architecture and RTOS-   Software architecture: Round Robin-round Robin with interrupts-function-queue-scheduling architecture-ROTS-task task status-task and data-semaphores and shared data-message queues-mail boxes and pipes-timer function-events-memory management-interrupts routines.

TEXT BOOKS:

1. John B.Peatmen,LPE(PERSON EDITION)"Design with PIC Microcontrollers"Edition reprints in india,year 2005.
2. David E.Simon,"An Embedded Software Primer".
3. Data sheet "PIC 16F87XX".

Programme : B.Sc IT   Course Title: Elective : Compiler Design

Subject Code: 17UIT6EL2   Year: III   Semester: VI

5 Hours / week   5 Credits

COURSE OBJECTIVES
- Learn the design principles of a Compiler.
- Learn the various parsing techniques and different levels of translation
- Learn how to optimize and effectively generate machine codes

UNIT I

Introduction: Compliers: Analysis of source program – Phases of compiler- cousins of compiler – grouping of phases. Simple one – pass compiler : Overview – Syntax definition – syntax – directed translation – parsing – translator for simple expressions. Lexical Analysis: removal of white space and comments – constant – recognizing identifiers and keyboards – a lexical analyzer – role of lexical analyzer – input buffering – specification of tokens – recognition of tokens (section 1.1 to 1.5, 2.5, 2.6, 3.1 to 3.4)

UNIT II

Symbol tables – incorporating a symbol table – symbol tables – entries – list data structures for symbol table – hash tables – scope information – Parsing – Principles top down parsing – predictive parsing, left recursion – role of parser – context-free grammars – writing a grammar – top down parsing – simple bottom up parsing – shift reduce parsing. (section 2.7 to 7.6, 2.4 and 4.1 to 4.5)

UNIT III

Syntax – directed translation – A translator for simple expressions – abstract and concrete syntax, adapting translations scheme, optimizing translator – syntax – directed definitions – construction of syntax trees – bottom up evaluation of S- attributed definitions – L-attributed definitions – top-down translation. Type checking: type system, specifications of simple type checker. (section 2.5 , 5.1 to 5.5 and 6.1)

UNIT – IV

Runtime Organization: Source language issues – storage organization – storage allocation strategies. Intermediate code generation: Intermediate languages – declarations – assignment statements. (section 7.1 to 7.3, 8.1 to 8.3)

UNIT – V

Code generation – issues in design of code generator – target machine – run-time storage management – basic blocks and flow graphs. Code optimization introduction – Principle sources of optimization. (section 9.1 to 9.4, 10.1,10.2)

COURSE OUTCOMES
- Perform frequency transforms for the signals.
- Finite word length effects in digital filters

TEXT BOOKS:
  1. Compilers, Principles, Techniques and Tools, A.V. Aho, R. Sethi, and J. D. Uliman, Addison Wesley Publishing Company, 1986.

Programme: B.Sc IT   Course Title: Elective : Multimedia

Subject Code: 17UIT6EL2   Year: III   Semester: VI

5 Hours / week   5 Credits

COURSE OBJECTIVES

- The overall objective of these courses is to develop multimedia professionals equipped with knowledge, skills and practical experience within the domain of technology, creativity and enterprise.
- With a strong focus on the creative aspects, there is a range of subjects that students have to study and practice.
- These include Graphic Design, Animation, Audio and Video, and Design for learning, web design and development.

Adobe Photoshop

Unit - I

What is Photoshop(01-04) - The Tools(20-27) – Color Modes(172-188) – Basic techniques of painting & brushing(220-230) – Cloning & Healing(309-322) – Brush Size & Shape(320-239) – How the Quick Mask mode works(430-434) - How Filters Works(473-476) – How to Draw & Edit Paths(392-413) – Blurring an image(494-525) – Corrective Filters(470-471).

Unit - II

Adding Clouds & Spotlights (601-605) – Creating & Using Smart Objects (647-659) – Applying Transformations (660-666) – Advanced Blending Options (701-709) – Making Custom Brightness Adjustment (871-897).

Corel Draw

Unit - III

Corel Draw Workspace (18-20) – Using the Color Palette (32-34) – Applying Mesh Fills(466-467) - Going 3D (81-83) – Using the Ruler (118-128) – Using group commands (276-277) – Creating Object Symbol (283-287)– Applying an Extrude Effect (670-671) – Text along a Curve (377-380).

Adobe Flash

Unit - IV

Properties Panel (237-238) – Floating and Docking Panels (67-68) – Tools Panel (71-75) – Document Window (76-84) – Drawing Tools (111-118) – Document Library (164-171) – Symbols – Basic Method of Flash Animation (329-333).

Unit - V

Onion Skinning (335-336) – Using tweens for animation (338-361) – Working with Special Layer Types (411-420) - Cartoon Animation Basics (329-333) - Cartoon Animation Techniques (431-436) – Vectors and Bitmaps (511-514) - Importing sound into Flash (478-480) – Exporting Video into Flash (557-574).

TEXT BOOKS:
1. Deke McClelland & Laurie Ulrich Fuller, Adobe Photoshop CS2 Bible (Unit I – Unit II).
2. Gary David Bouton, Corel Draw X4 the Official Guide (Unit III).
3. Robert Reinhardt and Snow Dowd, Adobe Flash CS4 Professional Bible (Unit IV,V).

REFERENCE BOOKS:
1. Deke McClelland & Laurie Ulrich Fuller, Adobe Photoshop CS2 Bible.
2. Gary David Bouton, Corel Draw X4 The Official Guide.
3. Robert Reinhardt and Snow Dowd, Adobe Flash CS4 Professional Bible.

Programme: B.Sc IT   Course Title: Elective : Computer Graphics

Subject Code: 17UIT6EL2   Year: III   Semester: VI

5 Hours / week   5 Credits

COURSE OBJECTIVES

- To understand computational development of graphics with mathematics
- To provide in-depth knowledge of display systems, image synthesis, shape modeling of 3D application.

UNIT I

Interactive input devices: Keyboards-Mouse-Trackball and Space ball-Joysticks-data Glove-Digitizers-Image Scanners-Touch Panels-Light pens.

Output devices: Printers and Plotters, Output Primitives-DDA and Bresenhem's line algorithm- Bresenhem's circle algorithm - character generation.

UNIT II

Two dimensional transformations-scaling, Translation and Rotation-Matrix Representations-Composite transformations-Reflection-shearing, Windowing and Clipping concepts-Zooming Effect-Panning effect-Cohen and Sutherland line Clipping algorithm-interactive picture construction techniques.

UNIT III

Three Dimensional transformation-Scaling,translation,Rotation,Reflection,Shearing-Composite transformation-Back face removal-Depth buffer method-Scan line method-Depth sorting method-Area Subdivision method.

UNIT IV

Multimedia: Definition- Multimedia hardware-Multimedia software-Multimedia networking-Multimedia applications-Multimedia standards-Multimedia PC.

Text: Elements of Text-Text Technology-Fonts and coloring text.

UNIT V

Digital representation of sound-Transmission of digital sound-Digital signal processing-Digital video and image compression: video compression techniques – JPEG image compression standard – MPEG video compression standard.

TEXT BOOKS:

1. Donald Hearn and Pauline Baker '*Computer Graphics'*, Prentice Hall of India, (UNIT I,II,III)
2. Toy Vaughon '*Multimedia Making it Work'*, (UNIT IV)
3. John F.Koegel Budford, '*Multimedia Systems*', Addison Welsey (UNIT V).